

# Old Ideas in New Boxes

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When we look at 'cutting edge' technologies, it is the radical newness that we are encouraged to see. This radical newness helps us forget that technologies arise out of past culture. The generation raised on Buck Rogers grew up to make the space race, and the generation raised on Star Trek are making the Holodeck. In order to understand the historical significance of 3D imaging, we must place it as part of the historical development of the automation of perspective. Lev Manovich has followed this line of study in his essay, as do Paul Virilio and Harun Farocki elsewhere.<sup>1</sup> According to this line of reasoning, we must look at computer graphics, interactivity, and virtual reality as moments in the larger cultural progression of the automation of visual systems.

This essay is framed by a question: where does computer graphics fit in the history of modern thought; what traditions is it heir to? It is almost a cliché that computer graphics is a quintessentially interdisciplinary pursuit. We hear that artists, cognitive scientists, designers, computer scientists, and a host of others are involved. But where are the central ideas coming from, where is the discipline of computer graphics in terms of philosophy, in terms of the philosophy of science, in terms of art theory, in terms of humanistic critique?

It has become commonplace for people in the art world to cite examples of computer scientists who regard the approximation of a color photograph as the goal of computer graphics. This esthetic goal is one which was thoroughly examined and in many cases, abandoned in the art world before the turn of the century. Two generations ago, Rene Magritte encapsulated the dilemma of representation with his (now famous) painting, "Ceci n'est pas une pipe." Dating from this time, theories of representation

(semiotics and semiology being early examples) have been important issues of art theory, and over the last 25 years have been absolutely central. It is no coincidence that this analysis of representation comes at a time when image technologies (video, TV, computer graphics, offset printing, cinema) flood our culture in a kind of inflationary economy of images.

This association of computer graphics with a previous technology of pictorial representation is an example of the way a technology might 'carry' certain cultural attitudes. Such questions of 'embedded' value systems that shape a technology, in hardware or software, opens out onto a broad field, aspects of which I will discuss below.

Software reifies value systems. No selection process is value-free, by definition. Software projects are shaped by the world views of their makers, and their value systems are (often unknowingly) incorporated into the work. Computer engineering, software engineering, and knowledge engineering are all heirs to the tradition of engineering, the quintessentially industrial revolution science, concerned with production; efficient production, by means of standardization of parts and processes. A computer is a device for automating production. Automation of production is dependent upon standardization of objects and categories.<sup>2</sup>

It may be that this process of standardization is antithetical to certain creative goals. It is true that many art movements over the last century have attempted to come to terms with the phenomenon of industrial mass production: Constructivism, the Bauhaus, the Futurists, and 'multiples' by artists like Les Levine in the 70s. Art has yet to come to terms with this economic-industrial phenomenon. But in an historical moment when ideas of 'standardization' are being questioned, from social policies of multiculturalism to the instantly re-programmable

robotic production line, it is also the applied sciences that must engage in such questioning.

There has been much discussion that virtual reality is a liberation from the so called 'mind-body duality' of René Descartes. This would be a marvelous thing if it were true, as neurological and physiological research over the last 50 years seems to indicate that such a distinction cannot be substantiated. That the mind-body split is, at best, a philosophical convenience, and at worst, completely wrong.

Contrary to popular rhetoric, one can argue that virtual reality technology, far from including the body in a virtual environment, actively excludes the body, re-affirms the Cartesian Duality, reifying it in code and hardware. One leaves one's meat body passive on the chair while the mind goes wandering, unhindered by a physical body, in pristine virtual space, itself a 'pure' platonic space, free of farts, dirt, and untidy bodily fluids.

Which brings one to a larger question: Why does each successive technology make the body more passive?<sup>3</sup> Why doesn't digital technology use the interface potential of the whole body? A bicycle does. Perhaps research into the virtual workplace will bring us an interface that uses the interactive potential of the whole body, the kinesthetic senses, memory for position in space. Certainly a virtual workplace in which one pushed keys on a virtual keyboard would seem silly. One can imagine a virtual workplace with physical tasks that utilized the body as a whole. One hopes that these physical capabilities would be utilized, not just 'occupied' with an interface as unproductive as a gym machine. Gyms are a very strange cultural phenomenon themselves. Can you imagine how strange it would appear to an agricultural worker of even 20 years ago, that armies of people pay huge amounts of money to do strenuous physi-

cal labor for no productive end? It is indeed curious that we design technologies that make the body passive and slovenly, then we are forced to design other machines that have no function except to counteract the symptoms induced by the previous machines.

But if virtual reality uncritically reifies the mind-body duality, is rationalism the totality of the computers' "world view"? It is often asserted that the major ideas that have shaped this century are due to Marx, Freud, Einstein and Heisenberg. What effect have their ideas had on the development of the computer? And what of newer philosophical ideas that actively critique Cartesian rationalism: poststructuralism and feminism and other varieties of postmodern thought. We might ask ourselves 'What could a feminist computer be?,' 'How might it differ from the computer we now have?'

#### What is a Feminist Computer?

Contemporary women artists who work in technological media are faced with a contradiction. The domain in which they are operating has been historically considered masculine, yet women's current access to electronic production tools seems to belie any gender barrier. Indeed, women have benefited in the last two decades to the extent that they have offered some freedom from the sexist art historical and critical practices attached to more established media. The philosophy of technology, however, has been articulated entirely from a masculinist perspective in terms that metaphorize and marginalize the feminine. In real social discourse, this claiming of technology has been reinforced by, and has probably encouraged, a male monopoly on technical expertise, diminishing or excluding the historical contributions of women to technological developments.<sup>4</sup>

So begins Nell Tenhaaf in her essay, "Of Monitors and Men & Other Unsolved Feminist Mysteries." She asserts that this invisibility of the feminine calls for 'a radical reconstitution of technology,' and we must ask ourselves whether the architecture of the machine and the premises of software engineering themselves are not so encumbered with old philosophical ideas that any 'reconstitution' would amount only to surface decoration.

A case example of the culturally 'male' perspective is the standard paradigm of navigation in virtual space. Simply stated, 'what the eye wants, the eye gets' in this world of unhindered voyeuristic desire. It is an implementation of what Jacques Lacan would refer to as the 'scopic desire.' "He undressed her with his eyes"—the male gaze is equated with

male sexual desire, a desire to conquer, to penetrate. Erkki Huhtamo has elsewhere traced a historical continuity from the 'penetration shot' in cinema to the 'powerful gaze' in virtual reality. So if navigation in virtual reality is the articulation of the phallic gaze, we might consider what a feminine alternative might be.

Agnes Hegedüs has presented us with such a 'radical reconstitution of technology' in her work *Handsight*. In this piece the hand guides a helpless eye, as one might help an elderly person. In conventional virtual reality, the eye can fly and grab, unhindered by the body; in *Handsight*, the body helps the helpless eye about the virtual space. In this provocative inversion of aspects of the conventional paradigm, an inversion which one is not told but discovers through interaction and consideration, Agnes Hegedüs has given us something that one may truly call a work of art in this medium.

What is a feminist computer? We don't know, but people like Tenhaaf and Hegedüs are suggesting some thought-provoking possibilities.<sup>5</sup>

#### Artistic Knowledge Bases

One of the things art seems to do is to function as a cultural 'early warning system.' Artists dealt with the idea of software, disembodied information, before the term existed in common language. Conceptual art can be thought of as "cultural software."<sup>6</sup> Conceptual artists worked on many of the problems that would arise within computer technology, outside of and before the technology evolved. Similarly, a vast untapped knowledge base for the development of interactive media exists in the corpus of happening-environment-installation-performance artwork of the last 30 years: formally radical experimental genres that took experiential space and the 'user interface' as their subject matter before anyone thought of the term. In a similar vein, Brenda Laurel has made a call for the relevance of the theatrical tradition to interactive design.<sup>7</sup> Not only is the cognitive science/computer science community generally unaware of these knowledge bases, but the general tendency for art research to pre-empt technological problems remains largely unremarked.

The artists in this exhibition have taken on the difficult task of exploring what kind of art might be made with these technologies. It is by no means a fait accompli; it may be that no art is possible with some technologies. It may be possible to dress technological tricks up in fancy clothes, but that is not art. Moreover, attempting to make art with these

technologies may require re-definition of precisely what we imagine 'art' to be. But this is properly the territory of artists, who have been continually negotiating the re-definition of 'art' over the last century, in response to changes in culture and technology. Art in the modern period in our culture has propagated itself by continually disproving itself, continually re-inventing itself. Rembrandt would not understand Monet, and Monet would not understand Pollock, and Pollock would not understand Koons. (In the same way that Newton would not understand Einstein, or Descartes, Deleuze.)

Many commentators, myself included, have suggested that computer-based interactivity and the phenomenon of virtual space represent a coming of age. This brings us to consider the possibility of an interactive art genre. Notwithstanding the many criticisms that may be levied against the deployment of computing in the everyday working world, there is no question that the realms of virtual space and electronic interactivity present profound and exciting opportunities for artists. But any artist who confronts this new territory can become immediately confounded by substantial esthetic dilemmas. Never before has there existed an art medium that possesses behavior. Myron Krueger has observed that most interactives tend to be 'one-liners.' Interactive media art will entail the development of new esthetic systems, esthetics of interaction.

Along with this burden, artists who choose to explore new media often also become developers of the hardware, as is the case with many artists in this exhibition. They find themselves in the R&D function of designing the technology, rather than simply esthetically manipulating a traditional art technology.<sup>8</sup>

There is also a burden of responsibility on the visitor to these interactive works, because the codes and conventions required to 'read' the work have not been culturally established. The unacknowledged burden on viewers of such work is that they must take care not to impose critical judgments germane to an older discipline (such as painting) upon a different technology.

#### Unrequited Consumption

Electronic technologies are consumer commodities. The relentless arrival of new models and updates is fueled, not necessarily by a cultural or societal need, but by corporate need for profit. Markets are constructed in order to sell the new model.

Artists who engage these technologies also simultaneously engage consumer commodity eco-

nomics. Artists are induced to upgrade continually. This creates a financial load and a pressure to continually retrain, to learn the newest version of the software. The need to upgrade is not necessarily a product of their esthetic development. Thus artists are caught in a cycle of unrequited technological consumption; they cannot learn the new technology before it is replaced with another. If art practice requires a holistic consideration of the cultural context of the subject matter, then the pace of technological change prevents this.

Consider the condition of the garage developer of art technologies, of the artist who feels compelled to develop a technology to realize his/her ideas, on the usual limited funding. The esthetic ideas are intimately linked to the technology of realization. If s/he is lucky, s/he might get the project finished before the corporate R&D labs release a consumer version. But at most she'll have a year or two in the sun before there's a Nintendo or Panasonic version. At that point the esthetic value of that labor evaporates.

Technologies remain meaningless until they become enmeshed in, and play a meaningful part in, culture. In order to produce an artwork with any technology, the technology must be considered in its cultural context, in the way it functions in human culture, and the type of relationship that it can have with an artist and with a creative process. These things take time. So these artists adopt a medium that may ultimately be antagonistic to their goals. This is a dilemma of our time.

#### Notes

1. See Paul Virilio, *War and Cinema, The Logistics of Perception*, New York, Verso, 1989 and the film, "Pictures of the World" and "Inscriptions of the War" by Harun Farocki.
2. cf Manuel DeLanda, *War in the Age of Intelligent Machines*, Swerve editions Zone Books MIT 1991.
3. Maria Fernandez (personal notes), 1992.
4. Nell Tenhaaf in her essay, "Of Monitors and Men & Other Unsolved Feminist Mysteries" *Parallelogram* v. 18 #3 1992.
5. Although the works in machine culture: the virtual frontier were selected strictly on their merits, it is pleasing to note that 30% of the artists represented are women. I am disappointed to be unable to say similar of the collection of essays.
6. See "The Intelligent Machine as Anti-Christ" Simon Penny, SISEA 1990 Proceedings, Groningen, Netherlands.
7. Brenda Laurel, *Computers as Theatre*.
8. Woody and Steina Vasulka, themselves pioneers, organized an excellent exhibition of the (largely unacknowledged) history of artists (including many SIGGRAPH pioneers) who developed video and audio synthesis technologies in the 70s. *Eigenwelt*

der *Aparatwelt* occurred at Ars Electronica 1992, Linz Austria. An excellent catalog to this exhibition is available from the Vasulkas. Interactive videodisks were also produced, and numerous pieces of the original hardware, repaired and in working order, were displayed.

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